FIGURE 1

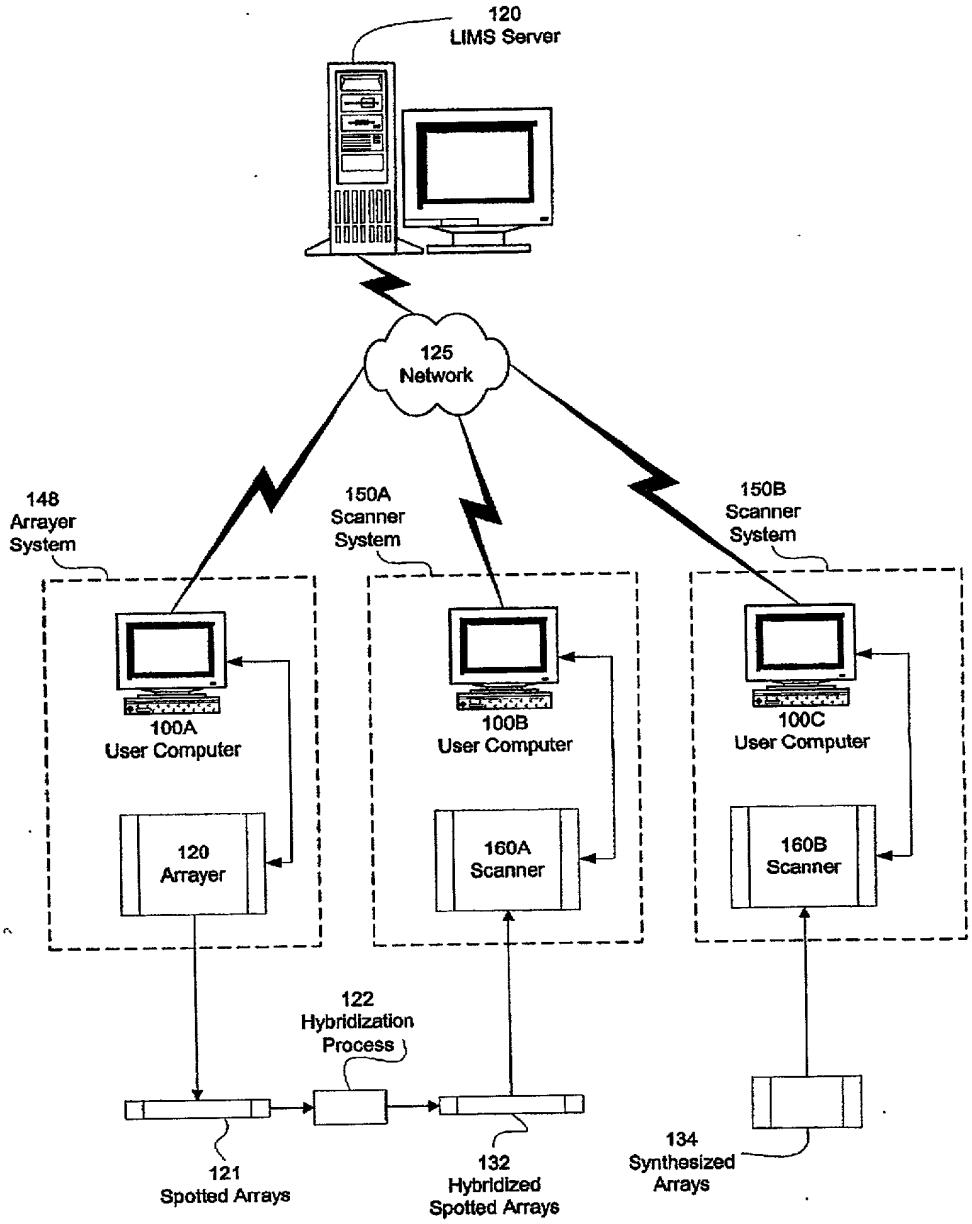

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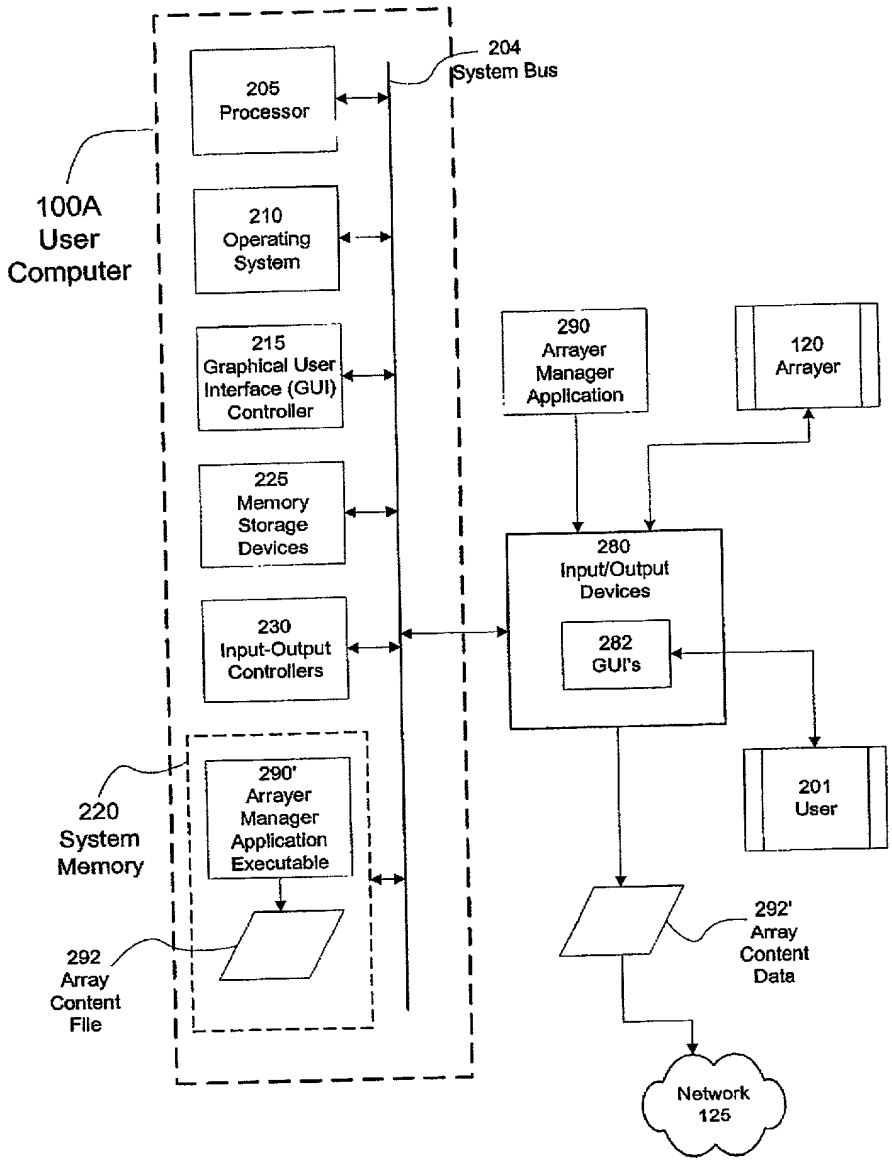
FIGURE 2


100A
User
Computer
205
Processor
204
System Bus
210
Operating
System
215
Graphical User
Interface (GUI)
Controller
225
Memory
Storage
Devices
230
Input-Output
Controllers
220
System
Memory
290'
Arrayer
Manager
Application
Executable
292
Array
Content
File
290
Arrayer
Manager
Application
120
Arrayer
280
Input/Output
Devices
282
GUI's
201
User
292'
Array
Content
Data
Network
125

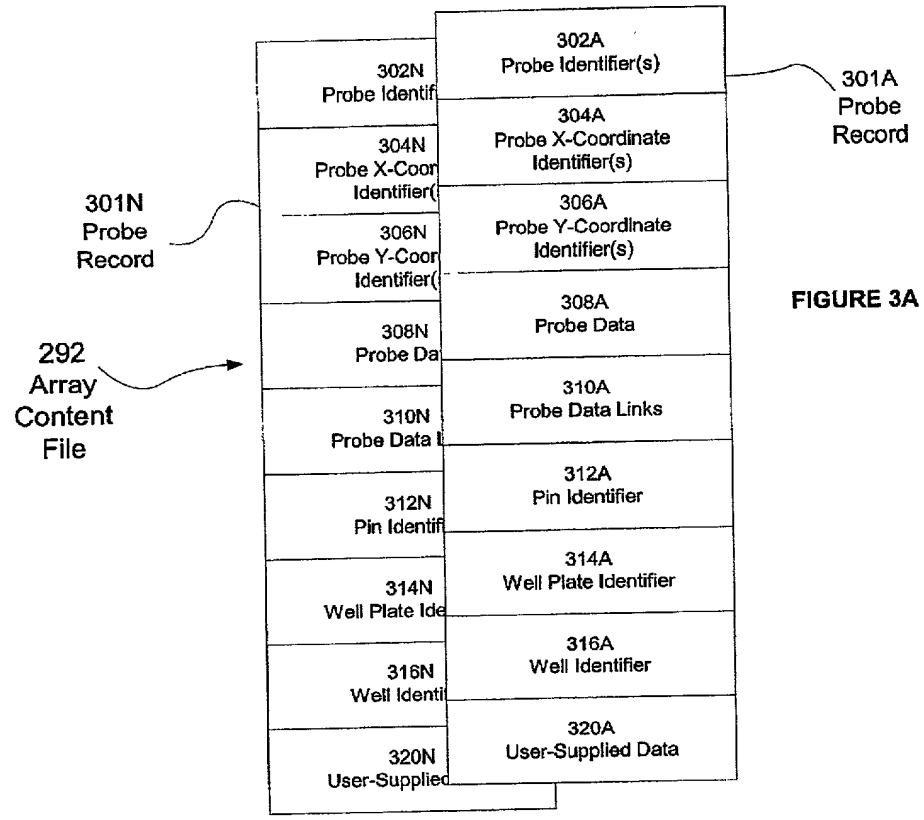


FIGURE 3A

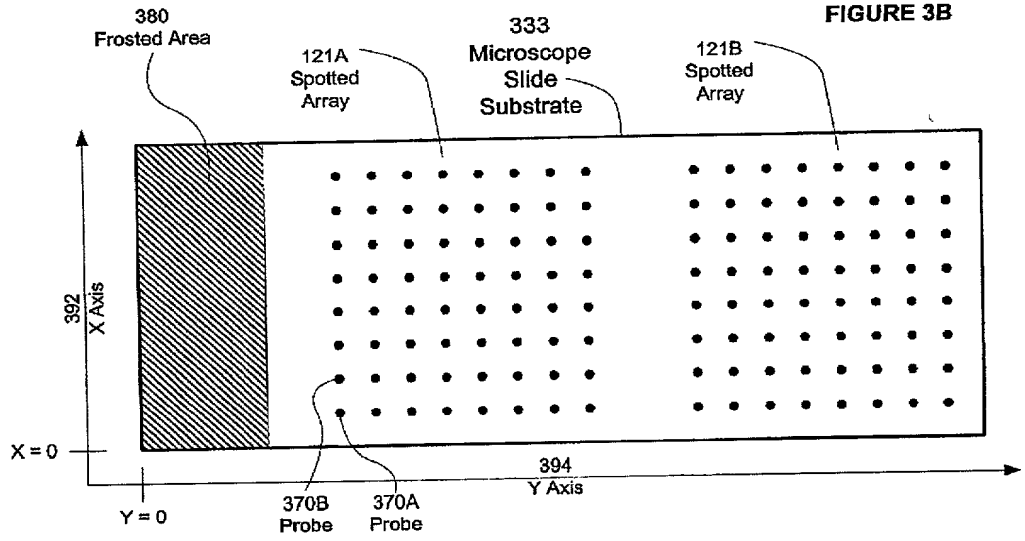


FIGURE 3B

FIGURE 4

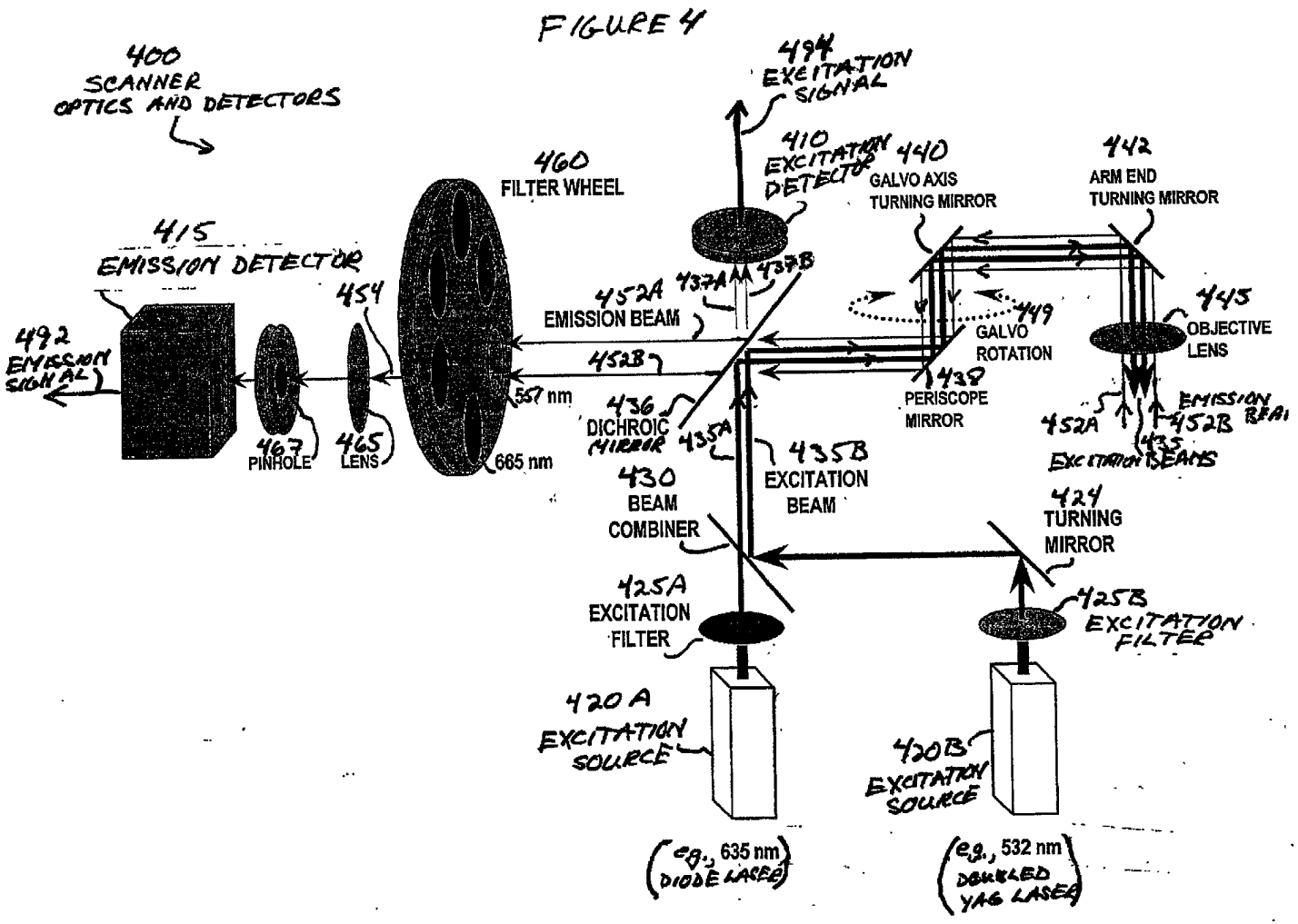

400
SCANNER OPTICS AND DETECTORS
494
EXCITATION SIGNAL
410
EXCITATION DETECTOR
440
GALVO AXIS TURNING MIRROR
442
ARM END TURNING MIRROR
460
FILTER WHEEL
415
EMISSION DETECTOR
454
452A
EMISSION BEAM
437A
437B
449
GALVO ROTATION
445
OBJECTIVE LENS
492
EMISSION SIGNAL
452B
557 nm
436
DICHROIC MIRROR
438
PERISCOPE MIRROR
452A
452B
EMISSION BEAM
435
EXCITATION BEAMS
435A
435B
EXCITATION BEAM
430
BEAM COMBINER
424
TURNING MIRROR
467
PINHOLE
465
LENS
665 nm
425A
EXCITATION FILTER
425B
EXCITATION FILTER
420A
EXCITATION SOURCE
420B
EXCITATION SOURCE
(e.g., 635 nm DIODE LASER)
(e.g., 532 nm DOUBLED YAG LASER)

FIGURE 5A

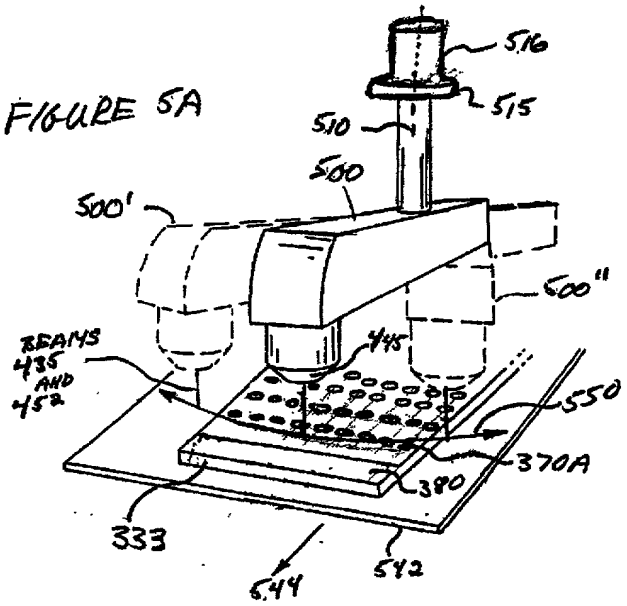
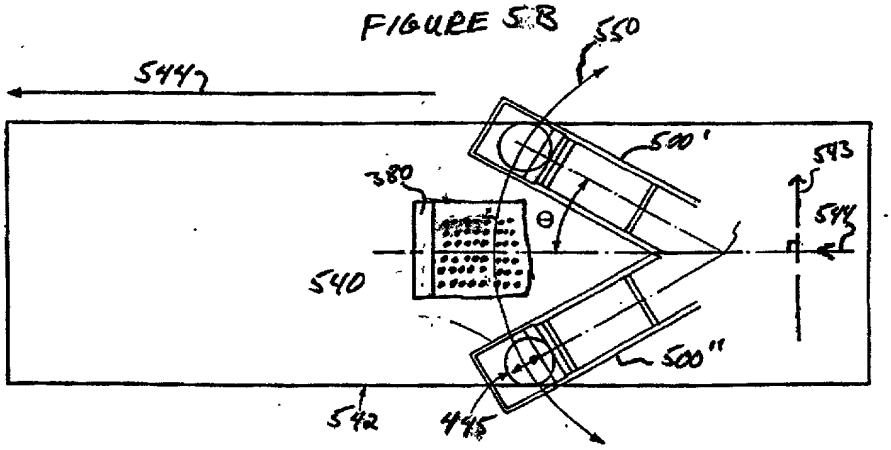


FIGURE 5B



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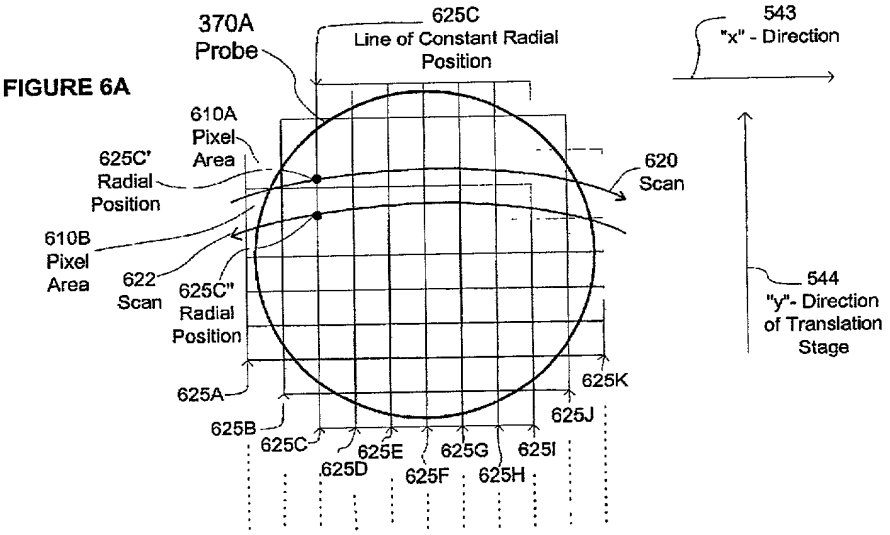

FIGURE 6A

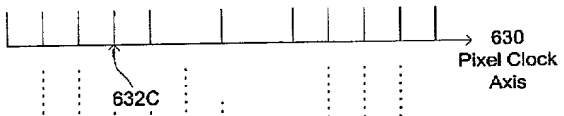

FIGURE 6B

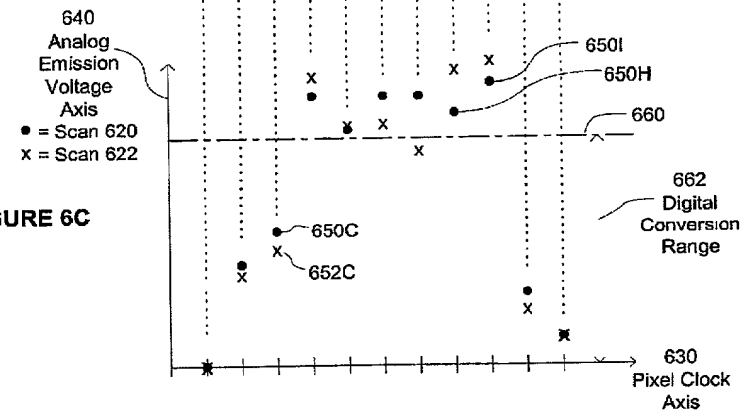

FIGURE 6C

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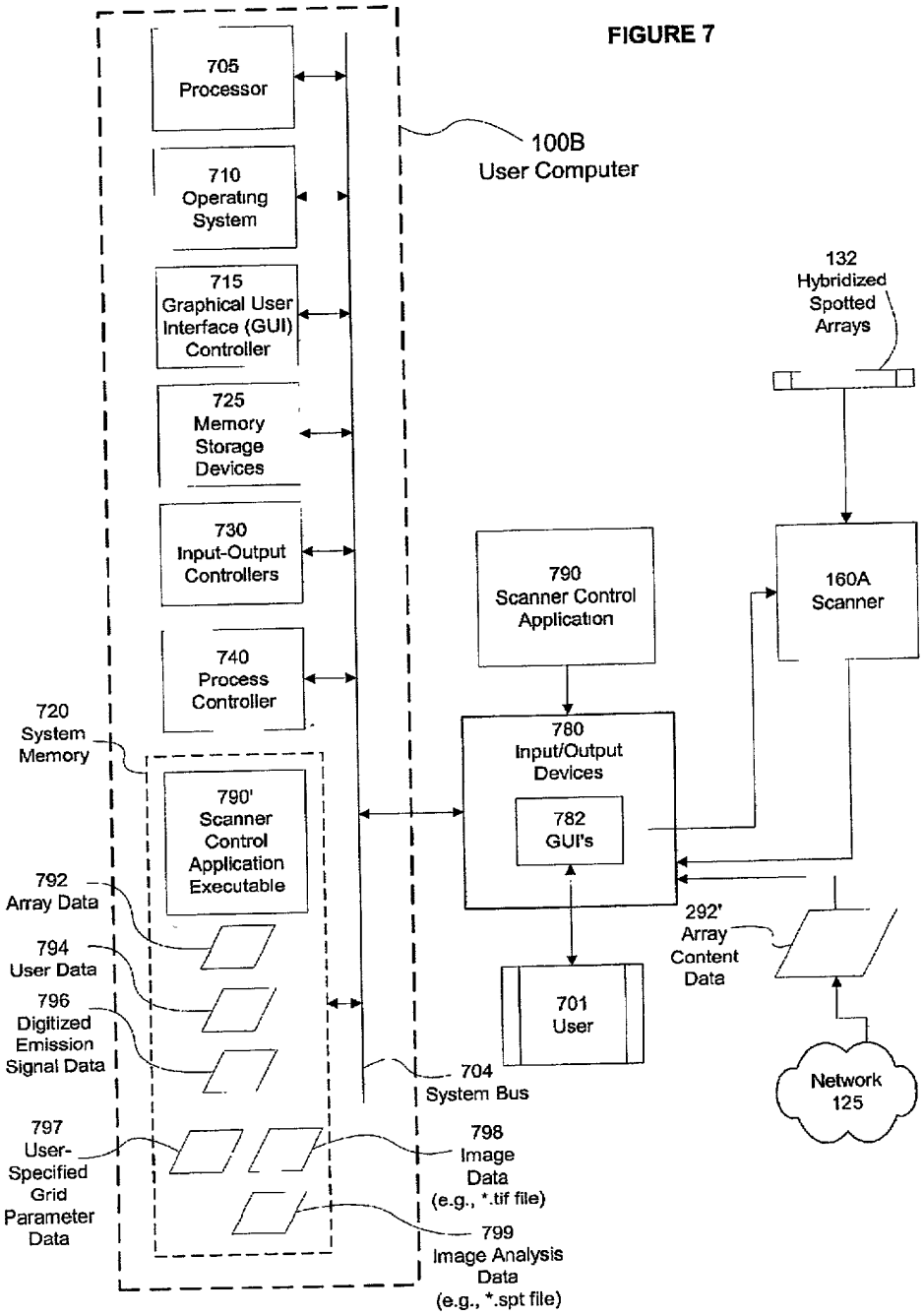
FIGURE 7



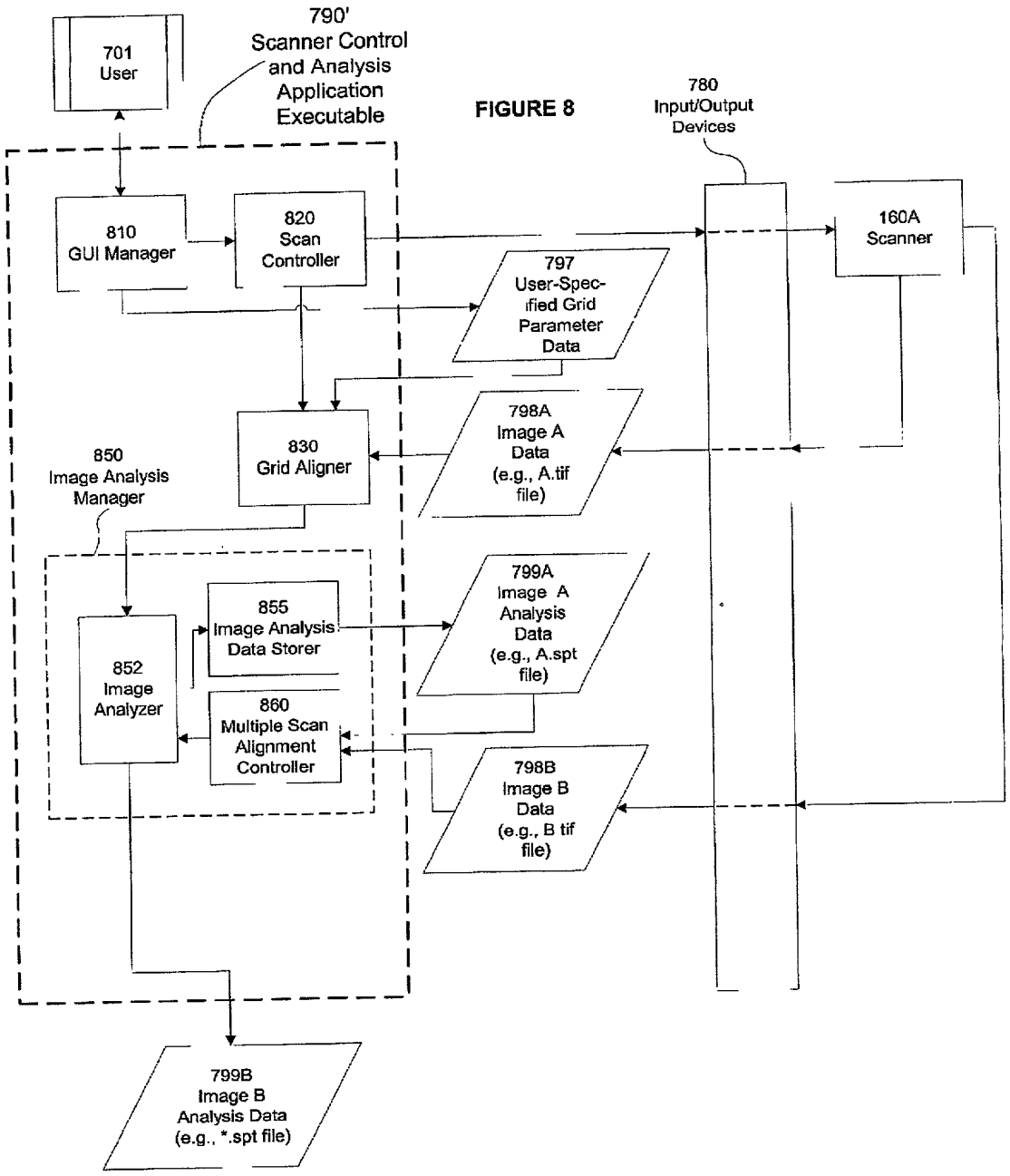

701
User
790'
Scanner Control
and Analysis
Application
Executable
780
Input/Output
Devices
160A
Scanner
810
GUI Manager
820
Scan
Controller
797
User-Spec-
ified Grid
Parameter
Data
798A
Image A
Data
(e.g., A.tif
file)
830
Grid Aligner
850
Image Analysis
Manager
855
Image Analysis
Data Storer
852
Image
Analyzer
860
Multiple Scan
Alignment
Controller
799A
Image A
Analysis
Data
(e.g., A.spt
file)
798B
Image B
Data
(e.g., B tif
file)
799B
Image B
Analysis Data
(e.g., *.spt file)

FIGURE 8

782A GUI

FIGURE 9

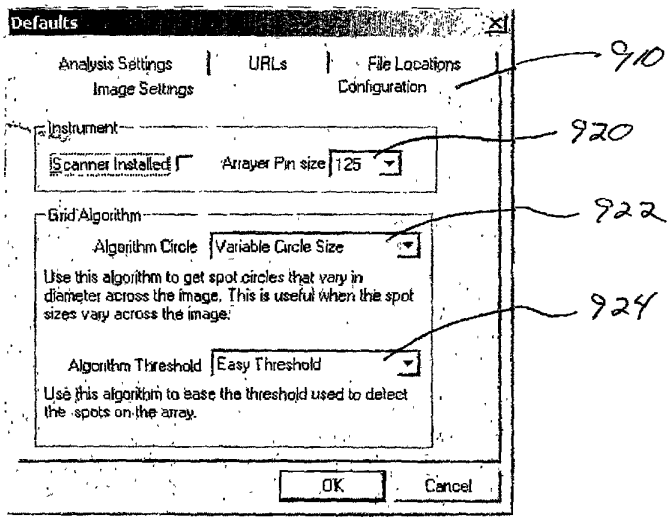


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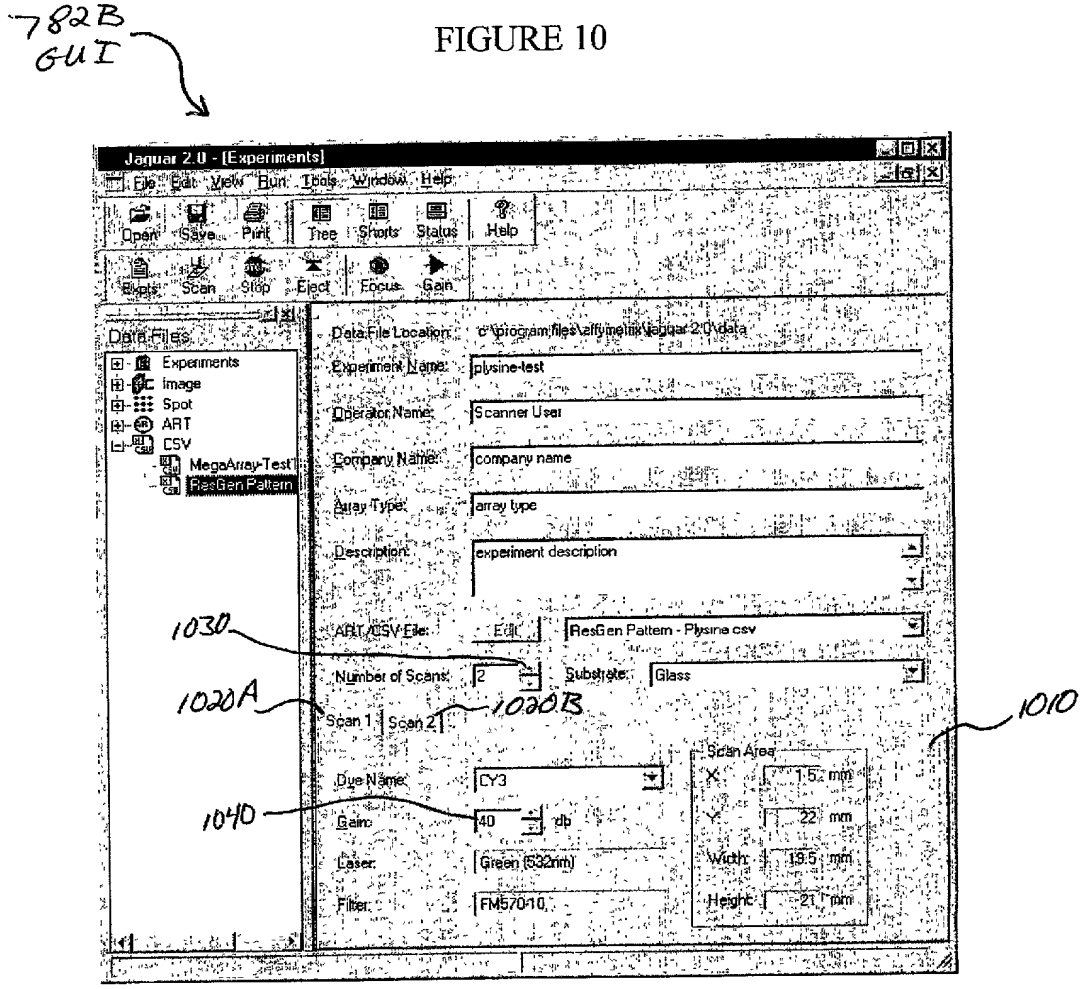
FIGURE 10



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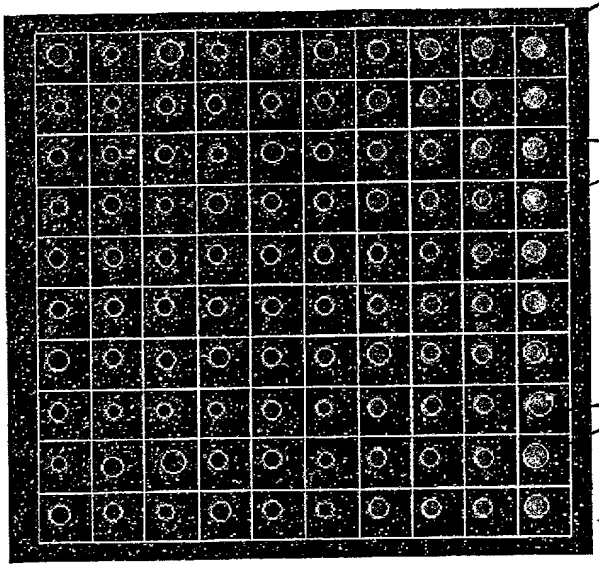

FIGURE
11A

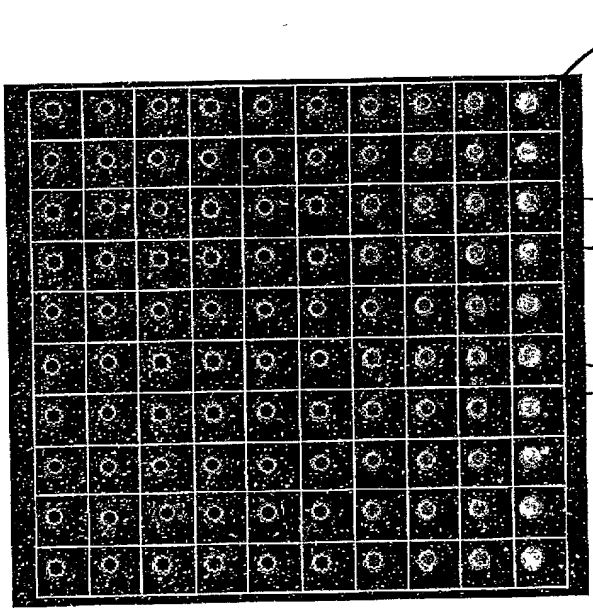

FIGURE
11B

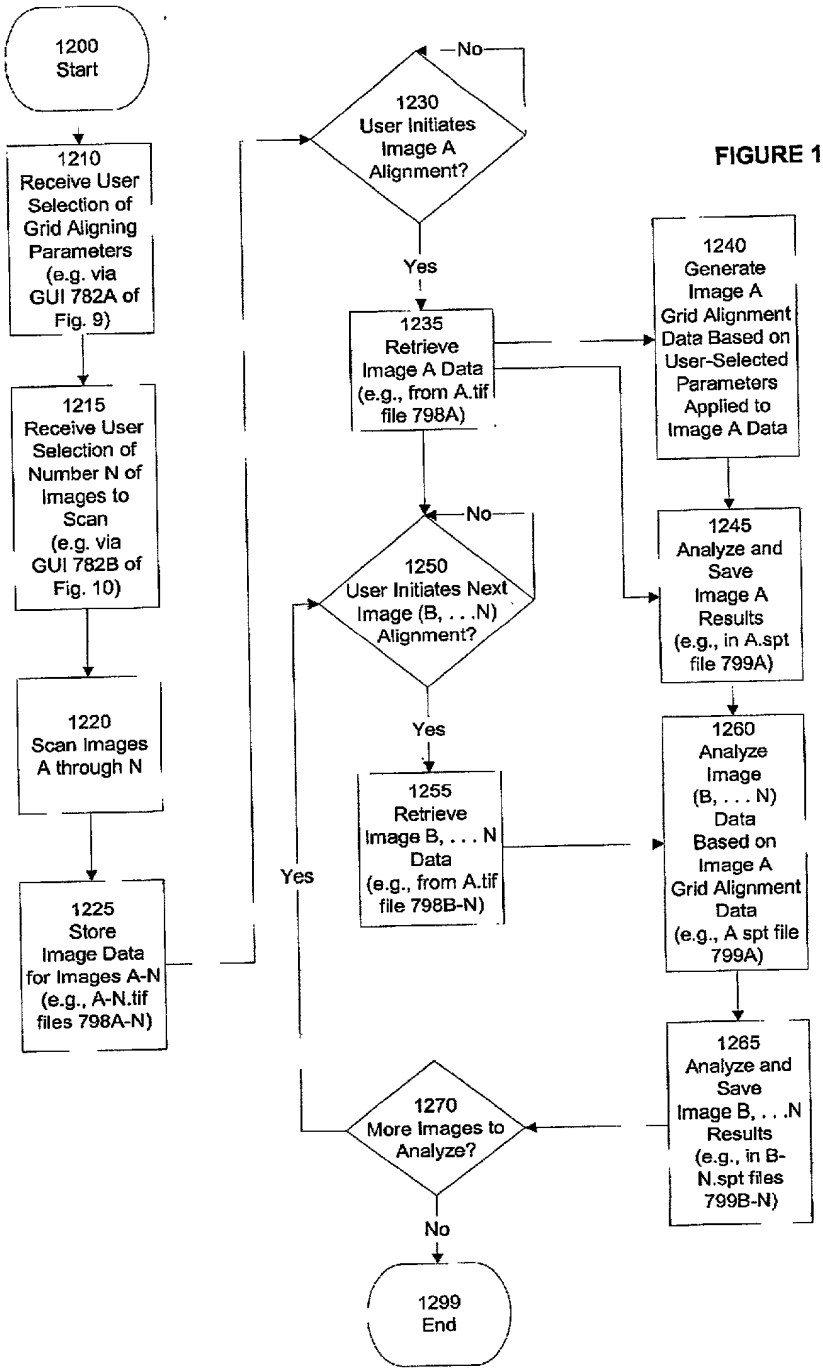
1200
Start
1210
Receive User Selection of Grid Aligning Parameters (e.g. via GUI 782A of Fig. 9)
1215
Receive User Selection of Number N of Images to Scan (e.g. via GUI 782B of Fig. 10)
1220
Scan Images A through N
1225
Store Image Data for Images A-N (e.g., A-N.tif files 798A-N)
1230
User Initiates Image A Alignment?
No
Yes
1235
Retrieve Image A Data (e.g., from A.tif file 798A)
1240
Generate Image A Grid Alignment Data Based on User-Selected Parameters Applied to Image A Data
1245
Analyze and Save Image A Results (e.g., in A.spt file 799A)
1250
User Initiates Next Image (B, . . .N) Alignment?
No
Yes
1255
Retrieve Image B, . . . N Data (e.g., from A.tif file 798B-N)
1260
Analyze Image (B, . . . N) Data Based on Image A Grid Alignment Data (e.g., A spt file 799A)
1265
Analyze and Save Image B, . . .N Results (e.g., in B-N.spt files 799B-N)
1270
More Images to Analyze?
Yes
No
1299
End

FIGURE 12